

**LAND INFORMATION  
MODERNIZATION AND INTEGRATION PLAN  
WISCONSIN DEPARTMENT OF HEALTH AND FAMILY SERVICES**



**Submitted March 2004**

## TABLE OF CONTENTS

I. EXECUTIVE SUMMARY -----	1
A. Agency Identification and Plan Coordinator -----	1
B. Planning Participants and Contact Person-----	1
C. Plan Summary-----	2
II. THE FIVE TECHNOLOGY ARCHITECTURES-----	3
A. Applications Architecture -----	3
B. Information Architecture -----	6
C. Technology Architecture-----	10
D. Organizational Architecture -----	13
E. Security Architecture-----	15

## **I. Executive Summary**

### **A. Agency Identification and Plan Coordinator**

The Wisconsin Department of Health and Family Services (DHFS), as required by statute, submits this annual integration plan to the Wisconsin Land Information Board (WLIB).

This Land Information Modernization and Integration Plan was prepared by staff in the DHFS Bureau of Information Systems, Development Services Section. This plan was prepared in accordance with the 2004 Instructions for State Agency Plans to Integrate Land Information. This plan references the descriptions of the five Technology Architectures as stated in those instructions. Preparation of this plan was coordinated by:

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### **C. Plan Summary**

DHFS is required by State Statute (Sec. 16.967(6)) to make land information (data with location characteristics, e.g., addresses) available to the public and sharable across state agencies. By integrating land information across agencies, the state intends to “reduce inter-agency duplication, reduce the cost of government and increase the services provided to Wisconsin taxpayers” and to achieve “improved analysis, decision support, and administration.”

To help achieve compliance with the above statute and facilitate the management of quality land information and Geographic Information System (GIS) applications, DHFS established the GIS Program in the fall of 1998 to serve the Department. The GIS Program promotes the organization’s education and awareness of the GIS technology and the value of address validation. The program provides a wide range of services and support to the DHFS business areas, including spatial data creation; mapping; GIS consulting and training; support for stand-alone mapping activities in some business and program areas; and address validation.

At the same time, the GIS program continues to investigate and develop the infrastructure to standardize, manage, distribute, and facilitate access to the agency’s land-based (geographic) data holdings, pushing the infrastructure to evolve and mature. Our goal is to put GIS capabilities directly into the hands of people who will most benefit from its application. Our efforts focus on developing and maintaining high quality land information as well as providing easy-to-use tools to access it.

DHFS does not create statewide base layers of land information (parcels, roads, legislative districts, etc.), but acquires these from other sources including other state agencies. We do create department centric data layers used to support program areas, and if appropriate, these layers may be shared with other parts of the Department or State.

Additionally, work continues in our Division of Public Health to investigate opportunities for GIS functionality in public health applications and on the Public Health Information Network. These initiatives may provide foundations for future land integration work in other parts of DHFS and will help establish needed infrastructure to support future applications.

## II. THE FIVE TECHNOLOGY ARCHITECTURES

The following sections provide detailed goals and objectives related to DHFS' stated overall vision and plan for the collection, maintenance, distribution, and integration of land information, including metadata.

### A. Applications Architecture

The *applications architecture* refers to the automated processes or systems that an organization uses to support its programs and to provide service to its customers.

#### 1. Major applications incorporating land information or GIS/LIS:

- ❑ **Public Health Information Network (PHIN):** The Division of Public Health is developing the PHIN to address bio-terrorism, disease outbreaks, hazardous material incidents, and other health alerts/tracking necessities. The Division is collaborating with other business units in DHFS, with UW's Department of Information Technology, DNR, and other partners to achieve a responsive and unified approach. The development of a potential GIS infrastructure and functionality is currently under investigation.
- ❑ **Cancer Reporting System:** The Division of Health Care Financing operates this program to monitor and report on the various types of cancers, their statistics, and their impact on Wisconsin citizenry. The Division utilizes GIS to develop maps presenting locations of cancer patients, their environment, and their demographics.
- ❑ **Wisconsin Statewide Automated Child Welfare Information System (WiSACWIS):** The Department is implementing a comprehensive child welfare case management information system in all Wisconsin counties. The system meets Federal reporting requirements defined by SACWIS regulations, assists the Department in complying with Wisconsin Act 303 which mandated the State's assumption of child welfare responsibilities in Milwaukee County, and automates child welfare practice standards across all counties. This system uses AddressBroker, the DHFS address standardization software, to validate zip codes.
- ❑ **Wisconsin Asbestos and Lead Database Online (WALDO):** The Wisconsin Asbestos and Lead Database Online (WALDO) software development project was mandated by Wisconsin 1999 Assembly Bill 806 Act 113 Section 27 (254.179.1,d,e), Section 32.2,3,4,5, and Section 33.2 (Lead-Free/Lead-Safe Certificate Registry). The mandate required the development of a lead-free/lead-safe property registry database for the entire State. This system uses the address standardization software AddressBroker to validate addresses to determine the correct zip code.

## **Other Applications of GIS:**

### **❑ Childhood Lead Program**

The Childhood Lead Program is responsible for protecting children and adults from lead poisoning. By testing children, tracking their location, and analyzing their data using GIS, the Childhood Lead Program has built an excellent map series that individually represent every Wisconsin county, as well as many of the largest cities in the State. The program's mapping efforts are extremely effective and are widely used throughout the Local Health Departments in the state. However, effectively sharing the information is difficult due to the number of maps they need to disseminate.

### **❑ Injury Prevention Section**

The Injury Prevention Section is responsible for identifying focus areas for injury reduction and providing education and technical assistance on injuries and injury prevention. They have a lot of injury information and require several maps to visualize and analyze their data properly. Chloropleth maps were created to show by county the total number of deaths or hospitalizations per an injury category as well as rates related to deaths or hospitalizations per 100,000. Injury categories include suicides, falls, motor vehicle accidents, poisonings, firearm accidents, and drowning accidents.

### **❑ Contract Monitor Section**

The Contract Monitor Section is responsible for certifying Health Maintenance Organizations (HMO's) to provide service in a certain region of the state. By using GIS, the Section is able to better analyze each HMO's service area and their providers in relation to the service area.

### **❑ Locations of Child Entities and Address Geocoding**

The Division of Disability and Elder Services (DDES) uses GIS to map the locations of child entities (e.g. day cares, parks, shelters, schools, etc.) in varying parts of the state so they can analyze the best place for release of sexual predators back into communities.

### **❑ Bureau of Quality Assurance**

The Bureau of Quality Assurance located in DDES, has a tremendous need for highly accurate geocodes of facilities they regulate (e.g. nursing homes, hospitals, hospices, adult day cares, etc.). They solve this need by sending ad-hoc requests to the Bureau of Information Systems which offers GIS services for geocoding.

## **2. High-level and agency wide land information integration efforts:**

Currently DHFS does not have any integrated land information. However, the PHIN initiative efforts discussed above may provide opportunities in the near future to develop some integrated land information.

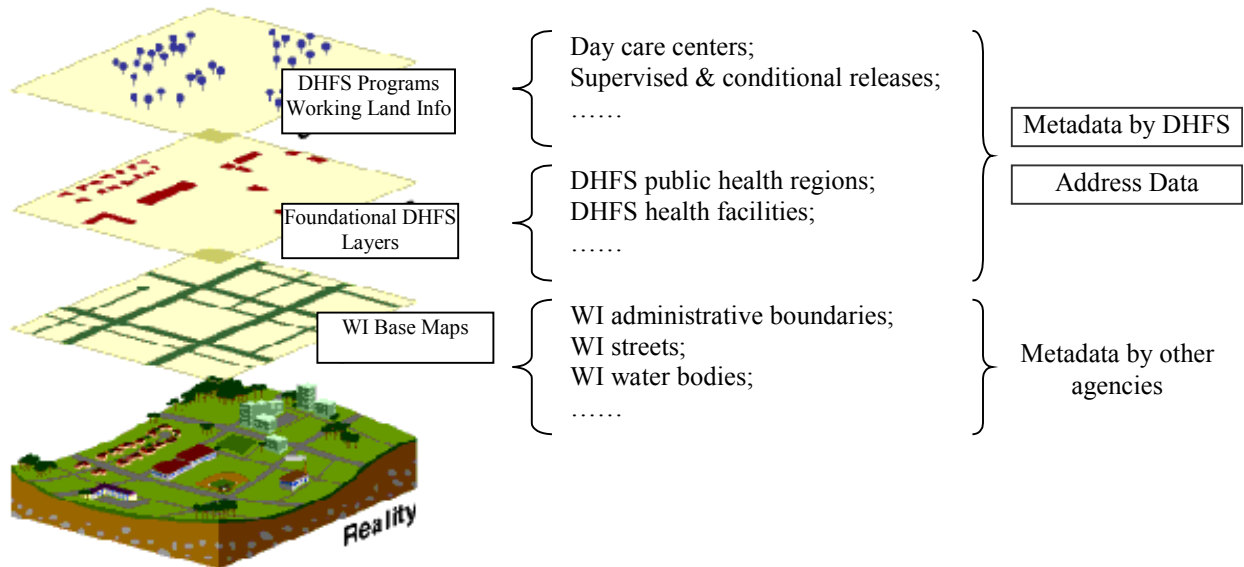
**3. Major GIS or Land Information System (LIS) application interfaces developed by DHFS:**

Currently the only application interfaces developed by DHFS are with WiSACWIS and WALDO. As noted above, both WiSACWIS and WALDO interface with the Address Broker.

## **B. Information Architecture**

**The *information architecture* refers to the organization or design of data. It provides a clear definition of how the data is structured, collected, shared, maintained, and stored from both the IT and business community perspectives.**

The DHFS Land Information Plan's information architecture is depicted in the following figure. Details of each category are further described.



***WI Base Maps and shared State data:*** This category includes the Topologically Integrated Geographic Encoding and Referencing System (TIGER), census, and base maps from DOA, DNR, and DOT. Also included is spatial data from Geographic Data Technology (GDT), Environmental Systems Research Institute (ESRI), and potential other sources. DHFS is a consumer or user of this data and respective data layers. The DHFS GIS Program facilitates the acquisition of this data through the Office of Land Information Services (OLIS) and others pending funding and resource availability and manages its distribution within DHFS.

***DHFS Foundational Land Information:*** This category includes general data layers that can be used across program areas in DHFS. These data contents are provided by DHFS business areas and authorized by them to be processed, spatially enabled, and to be shared across agencies and with the public. With authorization from the custodial business areas, the DHFS GIS Program facilitates the acquisition of the source data, and the creation, maintenance and sharing of land information within this category.



*DHFS Programs' Working Land Information:* This category includes DHFS programs' business-specific data. Some of this information may be sensitive either because it may reveal personally identifiable information or protected health information, or its usage is restricted by the business area. The GIS Program's information projects are guided by DHFS's general data security rules and are conducted according to specific agreements with the program areas. The GIS Program also works with the DHFS business areas to facilitate the sharing of data with other organizations, agencies, and the public as appropriate.

*DHFS Address Data Quality:* Most of the DHFS land information is related to a postal address. The ability to validate an address thereby improving its quality is very important to DHFS. Valid addresses help DHFS ensure notifications and delivery of benefits and services reach their locations in the most cost effective and efficient way. A valid address can also aid in detection of fraudulent activity. Furthermore, the enhanced data quality allows for more accurate geocoding, better spatial analysis, and better spatial representation in GIS and mapping applications.

*Metadata by DHFS:* The GIS Program facilitates the creation and maintenance of metadata for DHFS Foundational Land Information and Programs' Working Land Information. This metadata is shared along with the corresponding data layers.

## **1. Major land information datasets and metadata:**

The following list is a small representation of the types of layers we use and is in no way a comprehensive collection of datasets that we have at DHFS. Some of the layers we assume custodianship of, and some of them we get from other agencies. The best way to find out more about each layer is to contact the GIS Analyst at DHFS (please see the contact information at the beginning of this document).

- DHFS Business Regions: Five business regions geographically represented on the State background.
- DHFS Regional Offices: Locations of the five regional offices.
- DHFS Facilities/Institutions: Locations of the DHFS institutions.
- Hospital Locations: Locations of hospitals regulated by DHFS.
- Nursing Homes: Locations of Nursing Homes regulated by DHFS.
- Day Care Centers: Locations of Day Cares regulated by DHFS.
- Hospices: Locations of Hospices regulated by DHFS.
- Home Health Agencies: Locations of HHA's regulated by DHFS.
- Community Based Residential Facilities: Locations of CBRF's regulated by DHFS.
- **Mechanisms of access or distribution of land information and metadata:**

In the event we do share data internally or externally, we primarily use the Internet, but if file sizes are too large, we use CDs.

- **Major land information or metadata available or planned to be available through the DHFS web site:**

We do not have any data available on our web site, WISLINC, or any other web site at this time.

- **Policies, content or technical standards used for the collection and use of land information or metadata:**

We follow Federal Geographic Data Committee (FGDC) standards for metadata.

- **Major land information relating to or depending upon other State Agency land information for technical integration:**

We depend on street and roads data, water bodies, Wisconsin administrative boundaries, and county boundaries from other agencies such as DNR, DOA, DATCP, and DOT.

- **Land information from outside sources required to carry out day-to-day responsibilities, functions and statutory requirements:**

We use several base layers in our day-to-day operations, and we get those layers from DOA. Those layers include but are not limited to County Boundaries, Roads, Land Use, Hydrography, Minor Civil Divisions, Census polygons, Orthophotos, Digital Raster Graphics, and school districts.

We have not run into any obstacles in obtaining this data at the state level. However, when we need data from County or Municipal government, data collection is more difficult primarily because it's harder to find the right contact person who can help us find the dataset we're interested in acquiring.

We use the data as base layers in our maps.

## **2. Software used to develop and provide access to geospatial metadata:**

We use ArcCatalog for metadata purposes, and it generates metadata consistent with the FGDC content standards for Digital Geospatial Metadata.

## **3. Access method to DHFS metadata for outside agency use:**

Currently, we do not publish data on a web site; therefore, our access methodology is for the outside agency to contact the Department's GIS Analyst. Please see the contact information at the beginning of this document.

**4. Plans for future metadata collection and maintenance:**

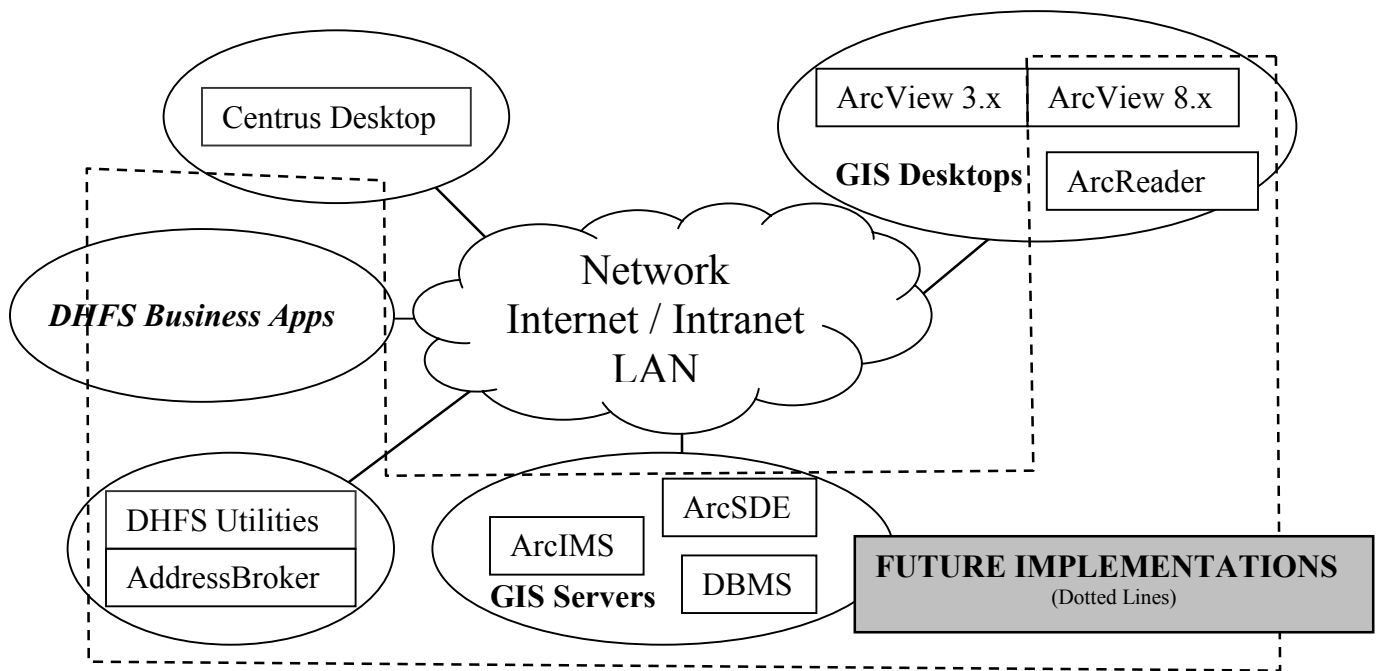
DHFS will continue to collect and maintain metadata on an as needed basis.

### **C. Technology Architecture**

The *technology architecture* refers to the hardware, software, systems, methods and standards an organization uses to develop and operate computer systems and communication networks for the transmission of data, voice, and video.

This section addresses DHFS' approach to GIS technology implementation and includes a discussion of our vision of future technology architecture, software purchases, and upgrades.

The DHFS Land Information Plan's technology architecture focuses on delivering efficient and cost-effective software to those who are in need. This architecture is planned to consist of the five components shown in the figure below. The components are further explained following the diagram and the current status and next-step plans for each component are also described.



**GIS Desktops:** We are in the process of transitioning department use of ArcView 3.x to ArcView 8.x. These software tools are used to support the mapping and analytical needs of DHFS business programs. ArcReader is a free map-viewing tool used to view, query, and analyze maps but can not be used for the maintenance of the maps. We have not yet formulated any plans to disseminate this tool to DHFS staff.

**Centrus Desktop, Address Broker, and DHFS Utilities:** These three applications describe current and future states in the above diagram. These applications standardize, validate, and geocode addresses. They also help improve the quality of address elements in DHFS business data and help spatially enable the data. Some

basic, universal, and reusable address cleansing and geocoding functions are being developed with AddressBroker.

*GIS Servers (ArcIMS):* Web-based ArcIMS provides a range of easy-to-use GIS functions to the general staff of DHFS. A set of basic 'DHFS Intranet GeoMapping Services' were developed with ArcIMS 3.0 in a test environment and are now under review and revision for the latest release of ArcIMS 4. These services allow DHFS staff to access land information available in the State of Wisconsin through the web browser. The Department will continue to develop more land information layers and appropriate functions according to program area needs. In the future, this service may be placed on the intranet/Internet pending funding and resources and become available to the staff/public where appropriate.

*GIS Servers (ArcSDE):* Currently, the spatially enabled data we have is not seamlessly linked with the web-based applications and the desktop GIS tools. The data has to be manually transformed into a format called shapefiles that GIS applications and tools can use. Another possible option is to develop applications to create shapefiles from geocoded addresses. As our client base increases and more funds become available, we are researching ArcSDE to seamlessly enable DHFS address data for spatial operations.

*DHFS Business Apps:* DHFS is a large organization and therefore has a large number of programs and services that will someday tap into our existing Address Data Quality Applications, such as Centrus Desktop or Address Broker, and GIS products, such as ArcView and ArcIMS via mainframe, client/server, or web programming facilities. By correctly "architecting" our network, GIS, and Address systems our internal business applications can harness the power supplied by both GIS and Address systems either separately or in conjunction with each other.

Given the State's direction to consolidate IT infrastructure and services, DHFS is seeking a state enterprise solution through the state's Technology Leadership Council for a networked GIS technology architecture. We will focus on developing intranet and Internet capabilities for land information sharing and business applications to provide the best cost/benefit solution to access shared land information and basic GIS functions. We are promoting sharing resources whenever practical within DHFS and across agencies. For business areas with existing GIS software and designated GIS users, we provide technology support services as appropriate. At the same time, we continue to research current and emerging technologies and recommend cost-effective, "best fit" solutions for the department and its business areas.

We currently use ESRI ArcView 8.x for our desktop mapping projects and plan to continue using ESRI as our vendor for all of our GIS software needs. Approximately 15 other people throughout the department use ArcView 8.x as well.

The following list provides the software products we use for each purpose.

- Web mapping software: ArcIMS (currently not in production)
- Group One / Sagent / Centrus address geocoding software: Centrus Desktop and AddressBroker
- Image processing/remote sensing tools: None
- Document scanning tools: HP Scanner
- CAD (Computer-Aided Drafting): None
- GPS (global positioning systems) tools: None
- Raster scanning/vectorization tools: None
- Digitizing tools: None
- Large-format plotting/other output capabilities tools: HP 1050 plotter
- Metadata-collection tools: ArcCatalog

## **D. Organizational Architecture**

The ***organizational architecture*** refers to the human resources in Information Technology (IT) and land information, and how they are used in support of the organization's mission.

### **1. Plans for GIS/LIS training:**

No formal training classes are offered at DHFS for its GIS users. However, one-on-one training is available on an as needed basis.

DHFS would like to see state-sponsored "ESRI authorized" training in GIS. Specifically, training in ArcGIS because it would encompass training in ArcView, ArcEditor, and ArcInfo.

### **2. Formal or informal land information sharing or development agreements currently supported:**

DHFS has no current MOUs, agreements, or partners relating to land information. We are interested in becoming partners with and developing MOUs with other state agencies, specifically DOA, DOT, and DNR.

If DHFS were to enter into an agreement, partnership, or MOU with an agency, we would need to follow strict guidelines about information sharing as it relates to HIPAA laws. Please refer to "Security Architecture – Information Aspect" bullet on page 15 for more information.

### **3. Internal agency GIS/LIS-related groups:**

DHFS GIS Users Forum was created in 2003 and meets quarterly to discuss GIS topics and answer user questions. Also, the PHIN group discusses various GIS topics at their meetings.

### **4. Other organizational needs we anticipate:**

DHFS anticipates a need for a statewide repository of GIS data available to all state GIS users as well as high-level web mapping and address standardization and geocoding services.

**5. Agency member or liaison (and backups) to the TLC Information Domain GIS Working Group:**

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## **E. Security Architecture**

**The following section describes policy or statutory provisions related to homeland security, privacy, cost recovery, liability, legal disclaimers, copyright, or licensing related to land information, mapping, data distribution, usage, and the Internet.**

The DHFS Land Information Plan's security architecture underscores the close relationship to the other architectures. Our implementation of the technology, application, information, and organizational aspects of the security architecture will follow all applicable Department IT security policies.

*Technology aspect:* We rely on and work with the Department's security officers and network team to ensure land information systems are properly protected.

*Application aspect:* We rely on and work with the Department's security officers and network team to ensure land information applications and data are properly protected. We work with the business areas to identify the appropriate access levels for certain functions and use appropriate tools to manage the accesses by setting user accounts and passwords.

*Information aspect:* We work with the business areas to assess and classify land information in their custody. For example, we classify data as public, for official use only, confidential/sensitive; and apply the appropriate level of protection/security controls. We also work closely with the business areas on identifying security and privacy issues with data sharing and establishing the proper procedures for sharing the data. We are required to comply with the Health Insurance Portability Accountability Act (HIPAA) security and privacy rules dictating the protection of Protected Health Information and Personally Identifiable Information. We will adhere to all federal and state laws and directives concerning these types of information.

*Organizational aspect:* We work with the Department's security officers and management abiding with applicable policies, procedures, directives, etc. to assure a secure environment.